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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/813,724	03/21/2001	Charles E. Larson	4360US (99-890)	3328
24247	7590	10/28/2003	EXAMINER	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			TOLEDO, FERNANDO L	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 10/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/813,724	LARSON, CHARLES E.	
	Examiner	Art Unit	
	Fernando Toledo	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 1-15 and 27-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>08292003</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 16 – 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Kim et al. (U. S. patent 6,225,688 B1).

In re claim 16, Kim in the U. S. patent 6,225,688 B1; figures 1 – 12 and related text, discloses providing a substrate 526; providing a flexible interposer 510 including a first surface having several of electrical contacts thereon for electrically connecting at least one semiconductor die to a substrate, a second surface and several of open vias extending through the flexible interposer from the first surface to the second surface (Column 2, Lines 40 – 47); providing at least one semiconductor die having several of bond pads on a first surface thereof (Column 11, lines 60 – 65); providing several electrical contacts 522; attaching the at least one semiconductor die to the flexible interposer forming an intermediate structure, the interposer being folded around the at least one semiconductor die, the at least one die being in electrical communication with the substrate through the flexible interposer by at least a portion of the several of electrical contacts filling at least portions of the several of vias extending from the first surface of the interposer to the second surface of the interposer making electrical contact with

several of bond pads on the first surface of the at least one semiconductor die; and attaching the intermediate structure to the substrate (Figure 14); attaching the intermediate structure to the substrate (Column 11, Lines 60 – 65).

3. In re claim 17, Kim discloses wherein the vias are filled with conductive metal (Column 2, Lines 40 – 47).

4. In re claim 18, Kim discloses wherein the second surface surrounds at least three sides of the at least one semiconductor die around which the interposer is folded (Figure 14).

5. In re claim 19, Kim discloses wherein the second surface of the interposer surrounds at least two sides of the at least one semiconductor die around which the interposer is folded (Figure 14).

6. In re claim 20, Kim discloses wherein the bond pads are in electrical communication with the electrical contacts through the vias in the flexible interposer (Figure 14).

7. In re claim 21, Kim discloses wherein the interposer folds around more than two semiconductor die in a serpentine fashion around groups including at most two semiconductor die therein (Figure 14).

8. In re claim 22, Kim discloses further including applying electrical contacts to a top surface of a high-density semiconductor package to attach semiconductor devices to the package (Figure 21).

9. In re claim 23, Kim discloses providing at least one semiconductor die 526 having several of bond pads on a surface of the at least one die (Figure 14); providing an interposer 510 including a first surface having several of electrical contacts, a second surface and several open vias extending completely through the interposer from the first surface to the second surface

(Column 2, Lines 40 – 47); providing several of electrical contacts 512; attaching the at least one die to the interposer to form an intermediate packaging structure having at least a portion of the several of electrical contacts filling at least portions of the several of vias extending from the first surface of the interposer to the second surface of the interposer making electrical contact with several bond pads on the first surface of the at least one semiconductor die (Column 2, Lines 0 – 47); providing a substrate (Column 11, Lines 60 – 65); attaching the substrate to the intermediate structure and connecting between the substrate and the at least one semiconductor die (Figure 14).

10. In re claim 24, Kim discloses attaching multiple semiconductor die in groups of two semiconductor die, the semiconductor die having a back-to-back configuration, a back side of one semiconductor die substantially contacting a back side of another semiconductor die of a group (Figure 14).

11. In re claim 25, Kim discloses wherein the electrical contacts and the bond pads provide electrical communication through the vias of the flexible interposer (Figure 14).

12. In re claim 26, Kim discloses forming electrical contacts on a top surface of the package to attach semiconductor device components (Figure 21).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fernando Toledo whose telephone number is 703-305-0567. The examiner can normally be reached on Mon-Fri 8am to 4pm.

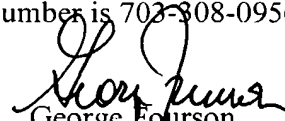
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


F Toledo


George Fourson
Primary Examiner
Art Unit 2823